

REMARKS/ARGUMENTS

Applicants respectfully request reconsideration of this application in view of the present amendments and the following remarks. By this amendment, Claims 1, and 22 are amended. As a result, upon entry of this amendment Claims 1-5, 8, 12, 21 and 22 are pending in this case, with Claims 1 and 22 being independent claims. Because no claims are added or canceled by this amendment, it is believed that no additional fees are due for the consideration of this paper. However, if additional fees are due, the Commissioner is authorized to charge such fees to deposit account number 13-2855. A copy of this paper is enclosed.

Claim Amendments

Claims 1 and 22 are amended to more clearly recite an ion plating device having a vaporizing source for vaporizing a film forming material to be formed on the substrate, and having a controller that controls the device to sequentially form a preliminary plasma forming process and a film forming process. Claims 1 and 22 are further amended to more clearly recite that during the plasma forming process controlled by the controller, the vaporizing source does not vaporize the film forming material while plasma is formed within the vacuum chamber, and that during the film forming process, the device forms the plasma by changing the vaporized film forming material into plasma and depositing the film forming material from the plasma on the substrate. The device as recited in Claims 1 and 22 as amended is disclosed in the present application as originally filed at least at page 19, lines 9-24. Therefore, Applicants respectfully submits that the amendments to Claims 1 and 22 do not present new matter and do not raise new issues, and respectfully request entry of the present amendments to Claims 1 and 22 and consideration of the claims as amended.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-5, 8, 12, 21 and 22 were rejected under 35 U.S.C. § 103(a) as being obvious over the admitted prior art of Figure 4 in view of Gorin (U.S. Patent No. 4,464,223), either alone or further in view of Okano et al. (JP 56-81678 A), White (U.S. Patent No. 4,039,416), Yao et al. (U.S. Patent No. 6,051,114) or Kofugi et al. (U.S. Patent No. 6,231,777).

Applicants respectfully submit that pending Claims 1-5, 8, 12, 21 and 22 are not properly rejectable over the applied references for the following reasons.

As discussed above, Claims 1 and 22 as amended to more clearly recite an ion plating device performing a preliminary plasma forming process followed by a film forming process. In the preliminary plasma forming process, the vaporizing source of the ion plating device does not vaporize the film forming material, the RF power unit does not supply the RF power to the inside of the vacuum chamber, and the bias power supply supplies a bias voltage in which an absolute value of the pulse bias component is smaller than an absolute value of the negative bias component to the inside of the vacuum chamber with a cycle set in the range of 1 kHz to 1 GHz to form plasma within the chamber. During the subsequent film forming process, the vaporizing source vaporizes the film forming material, the RF power unit supplies the RF power to the inside of the vacuum chamber, and the bias power supply unit supplies the bias voltage to the inside of the vacuum chamber with a cycle set in the range of 1 kHz to 1 GHz to form the plasma within the chamber, to change the vaporized film forming material into the plasma, and to deposit the film forming material from the plasma onto the substrate. The cited references do not appear to disclose or suggest an ion plating device forming a preliminary plasma prior to vaporizing the film forming material and depositing the material on the substrate.

The Examiner states that a plasma forming process can be a film forming process since the film forming material is exposed to plasma in both the plasma forming process and the film forming process as shown in the admitted prior art (Fig. 4) described in the present application. However, the film is formed only when the vaporizing source is operated to vaporize the film forming material. Therefore, the plasma forming process and the film forming process are clearly distinguished from each other depending on whether or not the vaporizing source is operated to vaporize the film forming material. Since the plasma and the film are formed simultaneously by means of the RF power unit and the direct current power supply in the admitted prior art, if anything, this process corresponds to the film forming process performed by the ion plating device in Claims 1 and 22. On the other hand, the ion plating device during the preliminary plasma forming process recited in Claims 1 and 22 forms a plasma but does not vaporize the film forming material because the vaporizing source


does not vaporize the film forming material while forming the plasma. Furthermore, since an absolute value of the pulse bias component of the bias voltage recited in Claims 1 and 22 is smaller than the absolute value of the negative bias component thereof, the bias voltage is distinguished from the RF power, even though the plasma may also be formed by the RF power. Therefore, the admitted prior art neither discloses nor suggests the preliminary plasma forming process recited in Claims 1 and 22. Further, none of the cited references appear disclose or suggest an ion plating device performing the two processes as recited in Claims 1 and 22. Because the cited references neither disclose or suggest the ion plating device recited in Claims 1 and 22, it follows that Claims 1 and 22 and the claims depending therefrom are not anticipated or rendered obvious by the prior art.

Entry and consideration of the foregoing amendments as improving the form of the application are solicited. The amendments have the effect of narrowing the issues for consideration by Examiner Hassanzadeh, or on appeal, and were not earlier presented because, prior to the final Office action and Examiner Hassanzadeh's comments therewith, these amendments were not felt necessary to obtain allowance.

For at least the foregoing reasons, reconsideration and withdrawal of the rejection of the claims and allowance of the currently pending claims are respectfully requested. Should the Examiner wish to discuss the foregoing or any matter of form in an effort to advance this application towards allowance, she is urged to telephone the undersigned at the indicated number.

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Respectfully submitted,

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